

WHAT IS CLAIMED IS:

1. A retracting apparatus which is provided with a fixed body and a moving body supported to said fixed body so as to freely move from one moving end position to another moving end position, and is automatically retracted to said one moving end position or said another moving end position, in the case that said moving body moves toward said one moving end position or said another moving end position and reaches an automatic retract position a predetermined distance apart from said one moving end position or said another moving end position, comprising:
  - a driving member mounted to a side of said moving body or a side of the fixed body;
  - an engagement member engaged with said driving member;
  - a guiding member guiding said engagement member; and
  - an energizing member energizing said engagement member in a retracting direction,
- wherein said guiding member is provided with a guiding groove which guides said engagement member in a predetermined range of a drawing and retracting direction during a period that said moving body moves between a retract end position and said automatic retract position, said guiding groove is constituted by two parallel arranged guiding grooves which are linear in the predetermined range of said drawing and retracting direction, and are bent at a predetermined amount toward an approximately vertical lower

side in an end portion in the drawing direction, said engagement member is provided with two sliding pins respectively sliding along said two guiding grooves, and said two sliding pins of said engagement member slide along  
5 two guiding grooves in accordance with movement of said moving body in the drawing direction, and move downward at a predetermined amount in the end portion of said guiding grooves in the drawing direction, whereby an engagement between said engagement member and said driving member is  
10 cancelled, said engagement member is locked, said driving member and said engagement member are engaged with each other at said automatic retract position on the basis of the movement of said moving body in the retracting direction, and the lock of said engagement member is  
15 cancelled.

2. A retracting apparatus which is provided with a fixed body and a moving body supported to said fixed body so as to freely move from one moving end position to another moving end position, and is automatically retracted to said  
20 one moving end position or said another moving end position, in the case that said moving body moves toward said one moving end position or said another moving end position and reaches an automatic retract position a predetermined distance apart from said one moving end position or said  
25 another moving end position, comprising:

a driving member mounted to a side of said moving body or a side of the fixed body;

an engagement member engaged with said driving member;

a sliding member with which said engagement member is engaged;

5 a guiding member guiding said sliding member; and  
an energizing member energizing said sliding member in a retracting direction,

wherein said guiding member is provided with a guiding groove which guides said sliding member in a  
10 predetermined range of a drawing and retracting direction during a period that said moving body moves between a retract end position and said automatic retract position, said guiding groove is constituted by a guiding groove which are linear in the predetermined range of said drawing  
15 and retracting direction, and are bent at a predetermined amount toward an approximately vertical lower side in an end portion in the drawing direction, said engagement member and said sliding member are provided with sliding pins respectively sliding along said guiding grooves, a  
20 sliding groove along which said engagement member slides in an approximately vertical direction is formed in said sliding member, the sliding pins of said sliding member and said engagement member slide along said guiding grooves in accordance with movement of said moving body in the drawing  
25 direction, the sliding pin of said engagement member moves downward at a predetermined amount in the end portion of said guiding groove in the drawing direction, and said

engagement member moves downward at a predetermined amount with respect to the sliding member via said sliding groove, whereby an engagement between said engagement member and said driving member is cancelled, said engagement member is  
5 locked, said driving member and said engagement member are engaged with each other at said automatic retract position on the basis of the movement of said moving body in the retracting direction, and the lock of said engagement member is cancelled.

10 3. A drawer apparatus provided with a drawer portion which is freely drawn and retracted with respect to the apparatus main body, wherein the drawer apparatus is provided with the retracting apparatus as claimed in claim 1, the fixed body of said retracting apparatus is mounted  
15 to a side of the apparatus main body, said moving body is mounted to a side of a drawer portion, and said guiding member is mounted to a side of said apparatus main body or a side of the drawer portion.

4. A drawer apparatus provided with a drawer portion  
20 which is freely drawn and retracted with respect to the apparatus main body, wherein the drawer apparatus is provided with the retracting apparatus as claimed in claim 2, the fixed body of said retracting apparatus is mounted to a side of the apparatus main body, said moving body is  
25 mounted to a side of a drawer portion, and said guiding member is mounted to a side of said apparatus main body or a side of the drawer portion.

5. A sliding door apparatus comprising:

a fixed body fixed to a fixed side;

a moving body supported to said fixed body so as to  
be freely drawn and retracted with respect to said fixed

5 body; and

a sliding door supported to said moving body,

wherein the sliding door apparatus is provided with  
the retracting apparatus as claimed in claim 1, the fixed  
body of said retracting apparatus is mounted to said fixed  
10 side or a side of the sliding door, and said moving body is  
mounted to the side of said sliding door or the fixed side.

6. A sliding door apparatus comprising:

a fixed body fixed to a fixed side;

a moving body supported to said fixed body so as to  
15 be freely drawn and retracted with respect to said fixed  
body; and

a sliding door supported to said moving body,

wherein the sliding door apparatus is provided with  
the retracting apparatus as claimed in claim 1, the fixed  
20 body of said retracting apparatus is mounted to said fixed  
side or a side of the sliding door, and said moving body is  
mounted to the side of said sliding door or the fixed side.

7. A sliding door apparatus comprising:

a fixed body fixed to a fixed side;

a moving body supported to said fixed body so as to  
25 be freely drawn and retracted with respect to said fixed  
body; and

a sliding door supported to said moving body,

wherein the sliding door apparatus is provided with the retracting apparatus as claimed in claim 2, the fixed body of said retracting apparatus is mounted to said fixed  
5 side or a side of the sliding door, and said moving body is mounted to the side of said sliding door or the fixed side.

8. A retracting apparatus which is provided with a fixed body and a moving body supported to said fixed body so as to freely move from one moving end position to another

10 moving end position, and is automatically retracted to said one moving end position or said another moving end position, in the case that said moving body moves toward said one moving end position or said another moving end position and reaches an automatic retract position a predetermined  
15 distance apart from said one moving end position or said another moving end position, comprising:

a driving member mounted to a side of said moving body or a side of the fixed body;

a sliding member engaged with said driving member and  
20 sliding;

a guiding member guiding said sliding member; and

an energizing member energizing said sliding member to said one moving side or another moving side,

wherein said guiding member is provided with a  
25 guiding portion which guides said sliding member in a predetermined range of a moving direction of said moving body during a period that said moving body moves from said

one moving end position to an automatic retract position or from said another moving end position to the automatic retract position, and a guiding groove having a large diameter portion formed in an end portion of said guiding portion in a direction of said one moving end position or a direction of the another end position such that a width is larger than a width of said guiding portion, said sliding member is provided with a sliding pin which is inserted through said guiding groove and slides along said guiding groove, the sliding pin of said sliding member slides along said guiding groove in accordance with movement of said moving body in said one moving end position direction or the another moving end position direction of the moving body, and rotates in said one moving end position direction or the another moving end position direction at said guiding groove end portion, whereby a dimension in an orthogonal direction to said guiding groove is changed, the sliding pin is fitted to said large diameter portion and locks said sliding member, an engagement between said sliding member and said driving member is cancelled, said driving member and said sliding member are engaged with each other at said automatic retract position on the basis of the movement of said moving body in said another moving end position direction or the one moving end position direction, and the lock of said sliding member is cancelled.

9. A retracting apparatus as claimed in claim 8, wherein the sliding pin of said sliding member is allowed to rotate

in said one moving end position direction or the another moving end position direction in the end portion in the side of the one moving end position or the end portion in the side of the another moving end position of said guiding groove, and said sliding member is pressed by said driving member so as to rotate around said sliding pin in said one moving end position direction or the another moving end position direction by moving said moving body in said one moving end position direction or the another moving end position direction, in the case that said sliding member is in the end portion in the side of said one moving end position or the end portion in the side of the another moving end position of said guiding groove in a state in which the engagement of said sliding member with said driving member is cancelled, whereby the engagement between said sliding member and said driving member is recovered.

10. A drawer apparatus provided with a drawer portion which is freely drawn and retracted with respect to the apparatus main body, wherein the drawer apparatus is

provided with the retracting apparatus as claimed in claim 8, the fixed body of said retracting apparatus is formed as the apparatus main body or is mounted to the side of the apparatus main body, said moving body is formed as the drawer portion or is mounted to the side of the drawer portion, and the guiding member is mounted to the side of said apparatus main body or the side of the drawer portion.

11. A drawer apparatus provided with a drawer portion



which is freely drawn and retracted with respect to the apparatus main body, wherein the drawer apparatus is provided with the retracting apparatus as claimed in claim 9, the fixed body of said retracting apparatus is formed as the apparatus main body or is mounted to the side of the apparatus main body, said moving body is formed as the drawer portion or is mounted to the side of the drawer portion, and the guiding member is mounted to the side of said apparatus main body or the side of the drawer portion.

10 12. A sliding door apparatus comprising:

an apparatus main body; and

a sliding door supported to said apparatus main body so as to be freely drawn and retracted,

wherein the sliding door apparatus is provided with the retracting apparatus as claimed in claim 8, the fixed body of said retracting apparatus is formed as the apparatus main body or is mounted to the side of said apparatus main body, and said moving body is formed as the sliding door or is mounted to the side of the sliding door.

20 13. A sliding door apparatus comprising:

an apparatus main body; and

a sliding door supported to said apparatus main body so as to be freely drawn and retracted,

wherein the sliding door apparatus is provided with the retracting apparatus as claimed in claim 9, the fixed body of said retracting apparatus is formed as the apparatus main body or is mounted to the side of said

apparatus main body, and said moving body is formed as the sliding door or is mounted to the side of the sliding door.